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CLINICAL CASE OF APPLICATION OF THE "ICON" DENTAL INFILTRATION TECHNIQUE

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ANNOTATION: Studying the problem of the prevalence of the carious process in the white spot stage and the level of development of care in modern dental practice led to the introduction of the most innovative method of treating this disease - dental infiltration with the "Icon" system. The article provides a detailed review of the literature on this topic over the past 5 years and presents a clinical case with an indicative aesthetic and functional result.
Key words: initial dental caries, infiltration technique, innovative technologies

Dental caries is one of the most common dental diseases. According to E.E. Maslak for 2015, the prevalence of caries in the Russian Federation, both in children and adults, tends to 100% (data vary depending on the region of the country). The same negative trend is observed in a number of foreign countries, with the majority of carious lesions often remaining untreated.

In addition, in all, even the most prosperous countries, there remains a part of the population that is not provided with the necessary dental care and has a level of dental caries several times higher than the national average .

Thus, the problem of dental caries remains acute to this day throughout the world, and therefore the World Health Organization (WHO), as part of the program for global improvement of the quality of dental health, notes the prevention of dental caries as the most important component.

But if for some reason the stage when primary prevention is carried out is missed, then one of the most promising methods of secondary prevention is the treatment of initial forms of dental caries using a qualitatively new technology - the microinvasive infiltration method

This technique was developed by Prof. H. Meyer-Luckel and Dr. Sebastian Paris, certified in Russia and successfully used for the treatment of caries in the spot stage since 2009.

The method is based on the infiltration of a pathological focus (carious spot) within the enamel and dentin with a highly fluid, light-curing infiltrant (photopolymer) based on methyl methacrylate, which restores the integrity of the tooth structure, which entails the primary stabilization of the process with maximum preservation of the tooth's own tissues.

This hypothesis is confirmed not only by clinical observations, but also by means of a computational experiment. In 2011-2013 in the works of A.Yu. Belyaeva, O.S. Gileva and co-authors studied changes in the elastic properties of tooth enamel subjected to a controlled destructive effect (acid etching), causing its demineralization and increase in porosity, and, on the contrary, a strengthening effect, occurring during pore infiltration with ICON photopolymer. As a result of the work, it was concluded that ICON technology has a positive effect not only on resistance to further spread of carious damage, but also on the hardness of tooth

enamel.
Our experience in treating patients with the Icon technique allows us to demonstrate a clinical case with an indicative functional and aesthetic result. In November 2015, patient N., 20 years old, came to the dental clinic of the Nizhny Novgorod State Medical Academy of the Ministry of Health of Russia, 20 years old, for a preventive examination of the oral cavity. He makes no complaints.
From the anamnesis it was revealed: he has colds 1-2 times a year, chronic sinusitis, no allergy history, one pregnancy that ended on June 12, 2015. Notes the consumption of sugar-containing foods 2-3 times a day between meals. After this, he does not carry out individual oral hygiene. I first noticed the appearance of stains on my teeth about a year ago.
Objective examination: the configuration of the face is not changed, the skin has a physiological color, regional lymph nodes are not palpable. An examination of the oral cavity revealed fillings in satisfactory condition and ineffective fillings. KPU = 5, which indicates a subcompensated form of caries, oral hygiene is satisfactory (according to the Green-Vermilion index).
On the vestibular surface in the area of the cervical part of tooth 1.2, a matte oval area of enamel was revealed, changed in color: on the distal half of the crown it is brown, on the medial half it is yellowish-white. When probing, roughness of the enamel is noted, probing in these areas is painless, no painful reaction to temperature stimuli is noted, percussion of tooth 1.2 (vertical, horizontal, comparative) is painless.
The mucous membrane in the area of the transitional fold of tooth 1.2 is pale pink, moderately moist, without visible pathological changes (Fig. 1).

On the vestibular surface of tooth 1.1 in the area of the cervical part, a matte linear section of white enamel was revealed, which was smooth and painless upon probing. There is no painful reaction to temperature stimuli; percussion of tooth 1.1 (vertical, horizontal.
comparative) is painless. The mucous membrane in the area of the transitional fold of tooth 1.1 is pale pink, moderately moist, without visible pathological changes (Fig. 1).
1.Initial condition of teeth.

Diagnosis: subcompensated form of caries, 1.2 - ka- in the form of a decrease in discoloration. Proposed and discussed caries in the spot stage (K 02.0), 1.1 - caries in the spot stage (K alternative treatment methods. Signed with information, bathroom agreed
Treatment: caries infiltration using the “1sop” method. The patient- Stages of treatment: the patient is warned that the priority is
1. Cleaning teeth 1.2 and 1.1 using a circular treatment of caries, allowing to avoid the progression of brushes and toothpastes without fluoride; carious process, with a possible side effect.
2. Stage of teeth cleaning 1.2 and 1.1 2) Installation of retraction thread;
3. Stage of placing the retraction thread
4. Drying of teeth and gums;
5. Isolation of the marginal gum in the area of teeth 1.3, 1.2. 1.1 and 1.2 with liquid rubber dam.
View after photopolymerization of liquid rubber dam

6. Applying Icon-Etch etching gel based on 15% hydrochloric acid to the area of carious lesions. Exposure time - 2 minutes;
Rice. 5. View during exposure of Icon-Etch etchant gel 7) Copious hydrochloric acid rinse with water for 30 seconds.
View at the stage of washing hydrochloric acid with water
8. Drying the treated surface of teeth 1.2 and 1.1 with an air stream until a matte surface appears;
View after drying the vestibular surface of teeth 1.2 and 1.1
9. Dry the surface with Icon-Dry ethanol for 30 seconds to completely dehydrate the enamel pores;
View at the stage of applying Icon-Dry 10) Drying the surface of the treated teeth with an air stream;
10. Drying the surface of teeth 1.2 and 1.1

11.Application of infiltrant (material 1sop-1p&kgap() using an individual attachment on the vestibular surface of teeth 1.2 and 1.1. Under the action of capillary polar forces, the polymer is introduced into the affected area and seals the pores. Exposure time - 3 minutes;
12. Carrying out photopolymerization for 40 seconds;
Moment of photopolymerization of the infiltrant
13. Repeated application of the polymer 1sop-1pAkgay, time
14. Elimination of excess material using fine exposure - 1 minute. The need to re-apply abrasive strips; The loss of infiltration is associated with high polymerization shrinkage of the material. Polymerization for 40 seconds;
Stage of eliminating excess material
15.Polishing the vestibular surfaces of teeth 1.2 and 1.1 to consolidate the result;
Polishing stage
16. Application of preventive varnish “Flairesse” Stage of applying Flairesse varnish
17. The obtained clinical result was recorded using a photo;
The effect obtained after infiltration with the “1sop” system
18. The patient was given a “1sop-passport”, entries were made in the outpatient chart of the dental patient;
19. The patient was informed about registration at the dispensary, a course of remineralizing therapy with “Flairesse” varnish was prescribed, and she was trained in individual oral hygiene;

Results:
tooth 1.2 - on the vestibular surface in the cervical area, enamel caries was treated using the non-invasive “1sop” technique. Clinical data indicate a significant reduction in the size of the lesion in the area of the cervical part of the tooth,
floor a significant elimination of the focus of brown discoloration and partial elimination of white matte discoloration, a significant reduction in the brightness of the affected area, which allows us to speak about the high-quality implementation of the procedure and the restoration of the integrity of the tooth structure.
Tooth 1.1 - on the vestibular surface in the cervical area, enamel caries was treated using the non-invasive “1sop” technique. The surface of the tooth has acquired a shiny appearance; when probing, smooth gliding is noted. Clinical data indicate complete elimination of the lesion. Rice. 16. The top photo is “before treatment”, the bottom photo is “after” the use of an innovative method for treating caries in the “1sop” spot stage.
According to R.K. Fattal et al., the effectiveness of using the infiltration of initial caries with the “1sop” material is very high, which was confirmed by research by this group of authors in 2014.
The results of the study note that after the procedures performed, a conglomerate of infiltrant, homogeneous in structure, is formed in the area of the carious spot. Average penetration depth of the material is 220+/- 10 microns.
After infiltration, no staining of the lesions was observed in 100% of cases, while before treatment, staining of demineralized lesions occurred in 100% of cases with an average score of 5.5 on the L.A. scale. Aksamita (corresponds to the average degree of enamel demineralization activity). This indicator indicates the absence of enamel permeability in the area of the infiltrated carious spot.
According to the research of Maksimovskaya L.N., Yakushechkina E.P. 2012, a significant decrease in the fluorescence of tooth tissue in the area of demineralization indicates stabilization of the carious process at the stage of white and pigmented spots.
The results of the study by O.V. Denga, A.E. Money, conducted in 2013, indicate an increase in the activity of the lysozyme enzyme in the oral fluid of children 7 days after application of the polymer by 1.62 times and a decrease in urease activity by 3 times, the range of fluctuations in the pH of the oral fluid decreases.
Conclusion: based on a review of the literature for 2007-2015, clinical and laboratory studies, the reasonable popularity of the non-invasive infiltration technique in the treatment of caries in the spot stage was revealed. As it was found out, in most cases, patients are unfamiliar with the innovative technology before the first procedure, but after thorough familiarization they receive excellent motivation to carry out this manipulation. It is important to note that in a conversation with the patient, first of all, the emphasis is on the fact that infiltration is a therapeutic procedure, and an aesthetic result is possible only in some cases as a side effect.

To avoid possible misunderstandings between the doctor and the patient, it is recommended to discuss in advance all aspects that affect the outcome of treatment, as well as take photographs at the stages of the procedure so that the patient can compare the initial state and the final result.
Data from numerous studies indicate the high effectiveness of the “Icon” technique, used in the treatment of enamel caries and dentin caries (up to 1/3), provided that the outer layer is preserved, which determines the reliability, stability of results and the prospects of preventive manipulations using the latest system.

References:

1. Belyaev A.Yu., Gileva O.S., Erofeeva E.S., Muravyova M.A., Svistkov A.L. A model of changes in the elastic properties of tooth enamel under the influence of various factors. // Bulletin of Perm University. 2011. Issue. 5 (9). pp. 25-28.
2. Denga O.V., Denga A.E., Gorokhivsky V.N., Denga E.M. The influence of infiltration photopolymer “Icon” on the biochemical and biophysical parameters of oral fluid. // Vyunik dentists. - 2013. - No. 1. - p. 118-120.
3. Zueva T.E., Kiselnikova L.P., Malanchuk I.I., Baddretdinova G.R. Visual criteria for the effectiveness of the infiltration method in adolescents after treatment with fixed orthodontic structures. // Pediatric dentistry and prevention. 2011. No. 2. P. 1922.
4. Makeeva I.M., Skatova E.A., Shakaryants A.A., Makeeva M.K. Determination of the effectiveness of caries treatment using the infiltration method based on the results of an in vitro study // Dentistry. 2010. No. 4. pp. 39-43.
5. Elnazarovich, Z. T., & Maxmudovna, T. M. (2024). CLINICAL MANIFESTATION IN THE ORAL CAVITY IN VITAMIN DEFICIENCY AND HYPOVITAMINOSIS. Journal of new century innovations, 52(4), 36-38.
6. Toshtemirova Mohira Mahmud qizi, Hamidov Mahmud Toshtemirovich, & Murotova Dilnoza Dilshod qizi. (2024). ADVANTAGES AND DISADVANTAGES OF MODERN METHODS OF TREATMENT OF HYPERTROPHIC GINGIVITIS. Academia Repository, 5(03), 58–61. Retrieved from https://academiarepo.org/index.php/1/article/view/642
7. Toshtemirova Mohira Mahmud qizi,Husanov Azamat Alisher o’g’li,Ibodullayev Xayrulla Xaydarqul o’g’li,Zoyirov Tulqin Elnazarovich. (2024). OG‘IZBO’SHLIGIDAKEKSAVAQARIYOSHDAGIO’PKASILIBILANKASALLANGANBEMORLARDAKELIBCHIQADIGANSHIKASTLANISHLARNIDAVOLASHSAMARADORLIGINIOSHIRISH. IQRO INDEXING, 7(2), 135-138. https://worldlyjournals.com/index.php/IFX/article/view/447
8. Otabek Turaqulov, Jasmina Umrullaeva, Tulqin Zoyirov, & Mohira Toshtemirova. (2024). CHANGES IN THE ORAL CAVITY DUE TO DISEASES OF THE DIGESTIVE SYSTEM. Journal of Academic Research and Trends in Educational Sciences, 3(1), 98–102. Retrieved from http://www.ijournal.uz/index.php/jartes/article/view/909
9. Kakhorovna, R. B. Khikmatullayevna MM Toshtemirova Mokhira Makhmud kizi.(2023). IMPROVING THE SURGICAL METHOD OF SCAR MICROSTOMY. Galaxy International Interdisciplinary Research Journal, 11(9), 300-304.